

CLAIMS:

1. An array (20) of magnetoresistive memory elements (10) provided with at least one data retention indicator device (50) comprising a first magnetic element (51) and a second magnetic element (52) each having a pre-set magnetisation direction, the pre-set magnetisation direction of the first and second magnetic elements (51, 52) being different
5 from each other, the first and second magnetic elements (51, 52) being suitable for aligning their magnetisation direction with magnetic field lines of an externally applied magnetic field exceeding a detection threshold value, wherein a parameter of the at least one data retention indicator device (50) is chosen so as to set the detection threshold value of the externally applied magnetic field to be detected, the at least one data retention indicator device (50)
10 having a state or an output indicative of exposure of the magnetoresistive memory elements (10) of the array (20) to said externally applied magnetic field.
2. An array (20) according to claim 1, wherein the parameter includes any or a combination of the shape, size and aspect ratio of the first and second magnetic elements (51,
15 52).
3. An array (20) according to claim 1, wherein the first and second magnetic elements (51, 52) comprise MRAM cells.
- 20 4. An array (20) according to claim 3, the MRAM cells having a free magnetic layer (12), wherein the MRAM cells have pre-set inverse magnetisation directions of their free magnetic layer (12).
5. An array (20) according to claim 1, wherein the at least one data retention
25 indicator device (50) is built adjacent to the magnetic memory elements (10) of which the data retention has to be indicated.

6. An array (20) according to claim 1, there being a plurality of data retention indicator devices (50) spatially distributed amongst the magnetic memory element in the array (20).
- 5 7. An integrated circuit comprising an array (20) of magnetic memory elements (10) according to claim 1.
8. An integrated circuit according to claim 7, furthermore comprising a control circuit for generating an error signal upon indication by any of the at least one data retention
10 indicator devices (50) of exposure of the array to an externally applied magnetic field exceeding the detection threshold value.
9. A method for indicating data retention of an array (20) of magnetic memory elements (10), the method comprising changing a pre-set magnetisation direction of a
15 magnetic data retention indicator device when the array is exposed to an external magnetic field exceeding a pre-set magnetic field threshold voltage.